Advanced Reactor Program - Summary of Integrated Schedule and Regulatory Activities*

Strategy 1	Knowledge, Skills, and Capability
Strategy 2	Computer Codes and Review Tools
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Legend

Concurrence (Division/Interoffice)	● EDO Concurrence Period
Federal Register Publication	Commission Review Period**
Public Comment Period	▼ ACRS SC/FC (Scheduled or Planned)
Draft Issuance of Deliverable	External Stakeholder Interactions
Final Issuance of Deliverable	↓ Public Meeting (Scheduled or Planned)

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Strategy	Regulatory Activity	Commission Papers	Guidance	Rulemaking	NEIMA	Complete	2020 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2021 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Development of non-Light Water Reactor (LWR) Training for Advanced Reactors (Adv. Rxs) (NEIMA Section 103(a)(5))																													
	FAST Reactor Technology				x	x																								
	High Temperature Gas-cooled Reactor (HTGR) Technology				x	x																								
	Molten Salt Reactor (MSR) Technology				x	x																								
	Competency Modeling to ensure adequate workforce skillset					x																								
2	Identification and Assessment of Available Codes					x																								
	Development of Non-LWR Computer Models and Analytical Tools																													
	Code Assessment Reports Volume 1 (Systems Analysis)					x																								
	Reference plant model for Heat Pipe-Cooled Micro Reactor					x																								
	Reference plant model for Sodium-Cooled Fast Reactor					x																								
	Reference plant model for Fluoride-Salt-Cooled High-Temperature Reactor					x																								
	Reference plant model for Gas-Cooled Pebble Bed Reactor																													
	Reference plant model for Molten Salt Fueled Reactor																													
	Code Assessment Reports Volume 2 (Fuel Perf. Anaylsis)					x																								
	FAST code assessment for metallic fuel					x																								
	FAST code assessment for TRISO fuel					x																								
	Code Assessment Reports Volume 3 (Source Term Analysis)					x																								
	Non-LWR MELCOR (Source Term) Demonstration Project																							↓	↓		↓			
	Reference SCALE/MELCOR plant model for Heat Pipe-Cooled Micro Reactor					x																								
	Reference SCALE/MELCOR plant model for High-Temperature Gas-Cooled Reactor					x																								
	Reference SCALE/MELCOR plant model for Molten Salt Cooled Pebble Bed Reactor					x																								
	Reference SCALE/MELCOR plant model for Molten Salt Fueled Reactor																													
	MACCS radionuclide screening analysis																													
	MACCS near-field atmospheric transport and dispersion model assessment					x																								
	MACCS near-field atmospheric transport and dispersion model improvement					x																								
	Code Assessment Report Volume 4 (Licensing and Siting Dose Assessments)					x									▼					▼										
	Code Assessment Report Volume 5 (Fuel Cycle Analysis)					x												▼		▼										
	Research plan and accomplishments in Materials, Chemistry, and Component Integrity for Adv. Rxs.					x																								
	Research on risk-informed and performance-based (RIPB) seismic design approaches and adopting seismic isolation technologies														↓															
3	Develop Regulatory Roadmap for Adv. Rxs (NEIMA Section 103(a)(1))				x	x																								
	Develop prototype guidance for Adv. Rxs					x																								
	Develop non-LWR Design Crtieria for Adv. Rxs					x																								
	EPRI Topical Report on Tri-structural Isotropic (TRISO) Fuel		x			x																								
	Quality Assurance Program Plan for Sodium-cooled FAST Reactor Metallic Fuel Data Qualification					x																								
	Develop Fuel Qualification Guidance for Adv. Rxs (NUREG-2246)		x		x											↓				▼									▼	
	Develop Advanced Reactor Content of Application Project (ARCAP) Regulatory Guidance		x					↓		↓		↓	↓	↓		↓		↓		↓	↓	↓		↓				▼	▼	
	Develop Advanced Reactor Technology Inclusive Content of Application Project (TICAP) Regulatory Guidance		x					↓		↓		↓	↓	↓		↓		↓		↓	↓	↓	↓	↓		↓		▼	▼	
	Develop non-LWR Design Review Guide (DRG) for Instrumentation and Controls reviews		x			x				↓		▼				▼		▼												
	Develop Advanced Reactor Inspection and Oversight Framework Document		x																				↓							
	Develop non-LWR Contruction Permit Guidance																											▼	▼	
	Develop Environmental ISG for Micro Reactors		x			x																								
	Develop Regulatory Guide for Licensing Modernization Project		x			x																								

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3	Develop non-LWR Source Term Information (NEIMA Section 103(c)(4)(II)		x		x	x																								
	Develop Molten Salt Reactor fuel qualification guidance																													
	Interim MSR fuel qualification guidance					x																								
	Final MSR fuel qualification guidance																													
	Develop guidance for Non-power Liquid Fueled Molten Salt Reactors (NEIMA Section 103(a)(3))		x		x	x																								
	Review of non-LWR Fuel Cycle Assessment of Regulatory Infrastructure.																													
	Develop Report on possible Material Control and Accounting Approaches for a Pebble Bed Reactor.					x																								
	Develop Metal Fuel Fabrication Safety and Hazards Final Report					x																								
	Develop Review of Hazards for Molten Salt Reactor Fuel Processing Operations					x																								
	Review of Operating Experience for Transportation of Fresh (Unirradiated) Advanced Reactor Fuel Types					x																								
	Potential Challenges with Transportation of Fresh (Unirradiated) Advanced Reactor Fuel Types					x																								
	Storage Experience with Spent (Irradiated) Advanced Reactor Fuel Types					x																								
	Potential Challenges with Storage of Spent (Irradiated) Advanced Reactor Fuel Types					x																								
	Transportation Experience and Potential Challenges with Transportation of Spent (Irradiated) Adv. Rx Fuel Types					x																								
	Disposal Options and Potential Challenges to Waste Packages and Waste Forms in Disposal of Spent (Irradiated) Advanced Reactor					x																								
	Information Gaps and Potential Information Needs Associated with Transportation of Fresh (Unirradiated) Adv. Rx Fuel Types					x																								
	Develop MC&A guidance for Cat II facilities (NUREG-2159)																													
	Develop contractor report on technology-inclusive human factors engineering reviews					x																								
4	Develop Regulatory Guide for endorsement of the non-LWR Probabilistic Risk Assessment Standard		x									↓					▼			↓						↓	▼	↓		
	Develop Regulatory Guide for endorsement of the ASME Section III, Division 5 Standard		x												↓		↓		↓						▼					
	Alloy 617 Code Cases (N-872 and N-898)																													
	Develop Draft Guide endorsing ASME Section XI Division 2 Reliability and Integrity Management (RIM)																													
5	Develop SECY paper related to Consequence Based Security (SECY-18-0076)					x																								
	Develop SECY paper related to EP for Small Modular Reactors and Other New Technologies (SECY-18-0103)				x	x																								
	Develop SECY paper related to Functional Containment (SECY-18-0096)				x	x																								
	SECY-20-0093 Policy and Licensing Considerations related to Micro Reactors	x				x							●																	
	Report regarding review of the insurance and liability for advanced reactors (Price-Anderson Act)	x																												
	Annual Fees for Non-Light Water Reactors and Microreactors										↓	↓		↓								↓			↓					
	Develop SECY Paper regarding Population-Related Siting Considerations for Advanced Reactors	x																												
6	Develop annual SECY paper regarding status of non-LWR activities	x																												
	NRC DOE Workshops					x																								
Rulemaking	Part 53 Plan - Risk-Informed, Technology Inclusive Regulatory Framework for Advanced Reactors (NEIMA Section 103(a)(4))			x	x																									
	Public Meetings																↓		↓	↓		↓	↓	↓			↓	↓		
	ACRS Interactions												▼		▼				▼	▼	▼	▼	▼		▼		▼	▼	▼	
	Physical Security for Advanced Reactors			x						↓																	●			
	Develop draft Generic Environmental Impact Statement for Advanced Reactors. Final GEIS.*(Has been voted to rulemaking by Comm.)										↓											↓			↓					

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	Emergency Preparedness Requirements for Small Modular Reactors and Other New Technologies.(NEIMA Section 103(a)(2))			x	x							↓															▼		▼	●
NEIMA Reports	Provide report to Congress regarding licensing processes for Advanced Reactors (NEIMA Section 103(b))				x	x																								
	Provide report to Congress regarding the use of risk-informed and performance based techniques for Adv. Rx. Licensing (NEIMA Section 103(c))				x	x																								
	Provide report to Congress on preparing the licensing process for RTRs within existing Regulatory Framework (NEIMA Section 103(d))				x	x																								
	Provide report to Congress on completing the rulemaking to establish a "technology-inclusive regulatory framework" (NEIMA Section 103(e))				x	x											↓							●						

*Dates reflected above are best estimates. Actual dates will be updated as additional information becomes available.

**The timeframe for the Commission's review is for planning purposes only, and does not reflect an expected date for Commission decision.

For additional technical and policy issues related to Adv. Rxs, please visit: https://www.nrc.gov/reactors/new-reactors/smr.html#techPolicyIssues